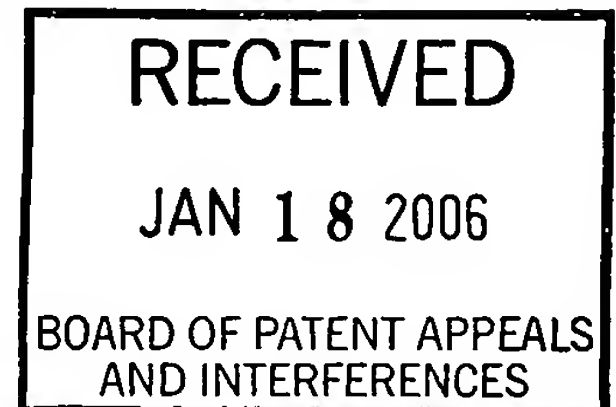


IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Art Unit: 3747 )  
)  
Examiner: Gimie, Mahmoud )  
)  
Applicant(s): Rein, et al. )  
)  
Serial No.: 10/691,954 )  
)  
Filing Date: October 23, 2003 )  
)  
For: PISTON HAVING A )  
PATTERNED COATING )  
AND METHOD OF )  
APPLYING SAME )  
\_\_\_\_\_ )

REPLY BRIEF



Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

By Notice of Appeal filed on July 29, 2005, applicants have appealed the final rejection of claims 1 and 10 - 17 communicated in the Office Action dated March 29, 2005 as supplemented by the Advisory Action dated August 12, 2005. Applicants submitted an appeal brief in support of that appeal on September 30, 2005. The Examiner filed an answer on November 15, 2005. Applicants submit this brief in reply to the Examiner's answer.

RECEIVED

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TECHNOLOGY CENTER R3700

**CERTIFICATE OF MAILING:** (37 C.F.R. 1.8) I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the U.S. Postal Service with sufficient postage as First Class mail in an envelope addressed to: Mail Stop Appeal, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on January 13, 2006, by Megan L. Schamanek.  
Megan L. Schamanek

### **STATUS OF THE CLAIMS**

Claims 1 - 19 were originally pending in this application. Claims 1 and 10 - 17 have been finally rejected. Claims 2 - 9 have been objected to as being dependent upon a rejected base claim. Claims 18 - 19 have been cancelled.

The rejection of claims 1 and 10 -17 is being appealed. A clean copy of claims 1 - 17 is attached hereto at Appendix A.

## GROUND OF REJECTION TO BE REVIEWED ON APPEAL

In the final rejection dated March 29, 2005, the Examination stated:

Claims 1, 10, 12 - 14, 16 and 17 are rejected under 35 U.S.C. § 102(b) as being anticipated by Schenkel (4,987,865).

Schenkel discloses a piston (10) adapted for reciprocal movement within a cylinder of an internal combustion engine, said piston comprising: a body having a crown (12) formed at the upper most margins of said body and a skirt (14) depending from said crown and adapted for relative sliding motion with respect to the cylinder, said skirt including an outer circumference having a major thrust side and a minor thrust side formed substantially opposite each other on said outer circumference of said skirt (14); a coating (28) bonded to said skirt so as to be juxtaposed between said skirt (14) and the cylinder, said coating (28) having a plurality of recesses (26) formed thereon so as to define a predetermined pattern of recesses (saw tooth pattern, col. 2 and ll. 43) on the surface of said skirt, said plurality of recesses (26) including a series of lubrication grooves extending across said outer circumference of said piston skirt at a predetermined angle in a chevron formation (V formation), operatively engaging lubricant between said skirt and the cylinder wall.

With regard to claim 12, the coating is a polymer coating, col. 3 and ll. 7

With regard to claims 12 and 13, the ridges and valleys are substantially hatched-like and the major and minor thrust sides are inherently and necessarily present in the invention.

With regard to claim 14, see above.

With regard to claim 16 and 17, for the property of lubrication retention, see col. 3 and ll. 26 - 43, while the thrust sides are inherently and necessarily present in the invention.

In the "Response to Argument" made by the Examiner to the applicants' Appeal Brief, the Examiner stated in part:

In response to the first argument (a): Schenkel discloses coating (28) having a plurality of recesses (26) formed thereon so as to define a predetermined pattern of recesses (saw tooth pattern, column 2 and ll. 43) on the surface of the skirt (14). The *recesses are formed on both the skirt and the coating* because the coating

takes the shape of the recesses (ridges and valleys) as they are applied on the surface of the skirt, as shown in Figures 2 and 3.

In response to the second argument (b): Schenkel discloses lubrication grooves (valleys, 26) extending across the outer circumference of the piston skirt at a predetermined angle (90°) relative to the longitudinal axis, see Figures 1 - 3. With regard to the *broad limitation* of “a skirt having substantially smooth outer circumference”, the outer circumference of the skirt appears to be substantially smooth in the relative terms given the depth of the ridges that range from 100 to 180 micro-inches (0.0001 to 0.00018 inches) and spacing of 0.010 to 0.014 inches (col. 1 and ll. 45 - 55).

In response to the third group of arguments (c): Schenkel shows a chevron formation, because the definition of a “chevron pattern” is a “V-shaped pattern”, see <http://dictionary.reference.com/search?q=chevron>; and that of “substantially hatch-like pattern” is a pattern made of “fine parallel or crossed lines”, <http://dictionary.reference.com/search?q=hatch>, see hatch<sup>3</sup>. Further the reference teaches equal spacing of 0.010 to 0.014 inches, col. 1 and ll. 48 - 50. (Emphasis in original).

## ARGUMENT

Applicants respectfully submit that the Examiner's interpretation of the claims in support of the rejection of claims 1, 12, and 16 has been made in a vacuum and without proper reference to the written description as well as the drawings in this application. In doing so, the Examiner has taken the claim terms at issue out of context with respect to the rest of the specification. This is improper.

The Patent and Trademark Office ("PTO") determines the scope of claims and patent applications not solely on the basis of claim language, but upon giving claims their broadest reasonable construction "in light of the specification as it would be interpreted by one of ordinary skill in the art." Indeed, the Rules of the PTO require that application claims must "conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description." 37 C.F.R. § 1.75(d)(1). Phillips v. AWH Corp., 415 F.3d 1303, 1316-17 (Fed. Cir. 2005) (citations omitted).

Indeed, the close kinship between the written description and the claims is enforced by the statutory requirement that the specification describe the claimed invention in "full, clear, concise and exact terms." 35 U.S.C. § 112, ¶ 1. See Networld, LLC v. Centraal Corp., 242 F.3d 1347, 1352 (Fed. Cir. 2001) ("The claims are directed to the invention that is described in the specification; they do not have meaning removed from the context from which they arose."); See also, e.g., Kinik Co. v. Int'l Trade Comm'n., 362 F.3d 1359, 1365 (Fed. Cir. 2004) ("The words of patent claims have the meaning and scope with which they are used in the specification and the prosecution history.")

In addition, the specification may reveal an intentional disclaimer, or disavowal of claim scope by the inventor. In these cases, the Federal Circuit instructs that the inventor has dictated the correct claim scope, and the inventor's invention, as expressed in the specification is regarded as dispositive. See SciMed Life Sys., Inc. v. Advanced Cardio Vascular Sys., Inc., 242 F.3d 1337, 1343-44 (Fed. Cir. 2001).

Here, each of claims 1, 12, and 16 describe the piston skirt as having predetermined patterns of recesses in the form of grooves or retaining discs *formed in the coating*. The plurality of recesses include a series of lubricating grooves extending across the outer circumference of the piston skirt *at a predetermined angle relative to the longitudinal axis*. As described in independent claim 1, the grooves *collectively* define a chevron formation that act to operatively engage the lubricant between the skirt and the cylinder wall. As described in claim 12, the grooves define a substantially hatch-like pattern. In addition, and as described in claim 16, the recesses define a series of lubrication retaining discs disposed in uniform spaced relation with respect to each other to provide lubrication retention along the outer circumference of the piston skirt.

The language of each of these claims must be read with reference to the written description and drawings. When this is properly done, it is clear that the structure described in each of claims 1, 12, and 16 is not disclosed or suggested by the Schenkel '865 patent. Indeed, Schenkel merely teaches V-shaped annular grooves *formed about the circumference of the piston skirt*. The skirt is then coated with a polymer *after* the grooves are formed on the surface of the skirt. The grooves taught by Schenkel also do not extend at any predetermined angle relative to the longitudinal axis of the piston and do not form any specific pattern.

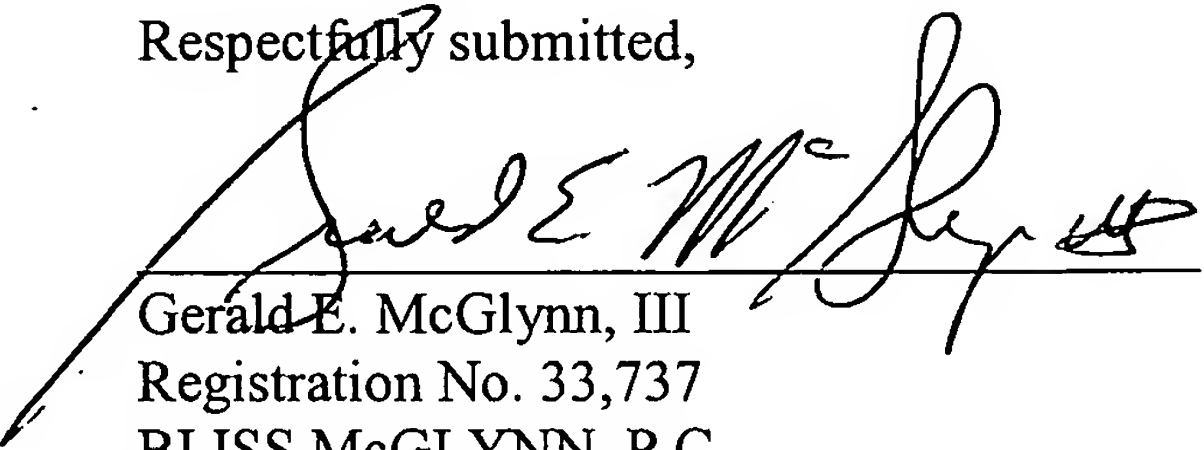
The Examiner's interpretations of the claims on appeal simply ignore the language of the claims with reference to the written description and drawings and thus takes them out of context. Moreover, Schenkel is merely representative of the state of the art which was expressly distinguished in paragraphs [0006] - [0007] and [0013] of the description of the related art found in the specification of the present application. Thus, the applicants have disclaimed or disavowed the structure which is representatively disclosed in the Schenkel patent. It is improper, then, to interpret the claims on appeal to encompass this structure in view of this disclaimer. SciMed Life Sys., Inc., 242 F.3d at 1343-44.

For these reasons as more fully explained in the applicants' Appeal Brief, it is respectfully submitted that the Schenkel '865 patent is not a proper anticipatory reference under § 102 and does not bar the patentability of the claims presently pending in this appeal. For all the reasons set forth above, applicants respectfully request that the Examiner's rejection of the claims pending in this case be reversed.

### CONCLUSION

In conclusion, applicants respectfully submit that the claims presently pending in this appeal clearly distinguish over the prior art and are therefore allowable. Accordingly, applicants respectfully solicit the allowance of the claims pending in this case.

Respectfully submitted,



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Date: January 13, 2006  
Attorney Docket No.: 9101.00004



## **APPENDIX A**

1. A piston adapted for reciprocal movement within a cylinder of an internal combustion engine, said piston comprising:

a body defining a longitudinal axis of said piston extending in the direction of reciprocal movement and having a crown formed at the uppermost margins of said body and a skirt depending from said crown and adapted for relative sliding motion with respect to the cylinder, said skirt including an outer circumference having a major thrust side and a minor thrust side formed substantially opposite each other on said outer circumference of said skirt;

a coating bonded to said skirt so as to be juxtaposed between said skirt and the cylinder, said coating having a plurality of recesses formed thereon so as to define a predetermined pattern of recesses on the surface of said skirt, said plurality of recesses including a series of lubrication grooves extending across said outer circumference of said piston skirt at a predetermined angle relative to said longitudinal axis such that said series of grooves collectively define a chevron formation that act to operatively engage lubricant between said skirt and the cylinder wall.

2. A piston as set forth in claim 1, wherein said plurality of recesses include a series of lubrication flow directing grooves extending in a downwardly converging manner at a predetermined angle relative to said longitudinal axis and across said outer circumference of said piston skirt in a chevron formation.

3. A piston as set forth in claim 2, wherein said plurality of recesses further include a reservoir channel located substantially at the center of said minor thrust side of said piston skirt and extending in a direction substantially parallel to the direction of reciprocal motion of said

piston within the cylinder, said chevron formation of grooves terminating at said reservoir channel.

4. A piston as set forth in claim 1, wherein said plurality of recesses include a series of flow directing lubrication grooves extending in a downwardly diverging manner at a predetermined angle relative to said longitudinal axis and across said outer circumference of said piston skirt in a chevron formation.

5. A piston as set forth in claim 4, wherein said plurality of recesses further include a reservoir channel located substantially at the center of said major thrust side of said piston skirt and extending in a direction substantially parallel to the direction of reciprocal motion of said piston within the cylinder, said chevron formation of grooves terminating at said reservoir channel.

6. A piston as set forth in claim 1, wherein said plurality of recesses include a series of lubrication flow directing grooves extending in a downwardly converging manner at a predetermined angle relative to said longitudinal axis and across said minor thrust side in a chevron formation.

7. A piston as set forth in claim 6, wherein said plurality of recesses further include a reservoir channel located substantially at the center of said minor thrust side and extending in a direction substantially parallel to the direction of reciprocal motion of said piston within the cylinder, said chevron formation of grooves terminating at said reservoir channel.

8. A piston as set forth in claim 1, wherein said plurality of recesses include a series of lubrication flow directing grooves extending in a downwardly diverging manner at a predetermined angle relative to said longitudinal axis and across said major thrust side in a chevron formation.

9. A piston as set forth in claim 8, wherein said plurality of recesses further include a reservoir channel located substantially at the center of said major thrust side and extending in a direction substantially parallel to the direction of reciprocal motion of said piston within the cylinder, said chevron formation of grooves terminating at said reservoir channel.

10. A piston as set forth in claim 1, wherein said coating is a polymer coating.

11. A piston as set forth in claim 1, wherein said coating is a metallic coating.

12. A piston adapted for reciprocal movement within a cylinder of an internal combustion engine, said piston comprising:

a body defining a longitudinal axis of said piston extending in the direction of reciprocal movement and having a crown formed at the uppermost margins of said body and a skirt depending from said crown and adapted for relative sliding motion with respect to the cylinder, said skirt including an outer circumference having a major thrust side and a minor thrust side formed substantially opposite each other on said outer circumference of said skirt;

a coating bonded to said skirt so as to be juxtaposed between said skirt and the cylinder, said coating having a plurality of recesses formed thereon so as to define a predetermined pattern of recesses on the surface of said skirt, said plurality of recesses including a series of intersecting grooves extending across the outer circumference of said piston skirt at a predetermined angle relative to said longitudinal axis so as to define a substantially hatch-like pattern, operatively engaging lubricant between said skirt and the cylinder wall.

13. A piston as set forth in claim 12, wherein said coating is bonded to said major thrust side and said minor thrust side of said piston skirt and adapted to operatively engage lubricant between said major thrust side and the cylinder wall and said minor thrust side and the cylinder wall.

14. A piston as set forth in claim 12, wherein said coating is a polymer coating.

15. A piston as set forth in claim 12, wherein said coating is a metallic coating.

16. A piston adapted for reciprocal movement within a cylinder of an internal combustion engine, said piston comprising:

a body having a crown formed at the uppermost margins of said body and a skirt depending from said crown and adapted for relative sliding motion with respect to the cylinder, said skirt including a substantially smooth outer circumference having a major thrust side and a minor thrust side formed substantially opposite each other on said outer circumference of said skirt;

a coating bonded to said skirt so as to be juxtaposed between said skirt and the cylinder, said coating having a plurality of recesses formed thereon so as to define a predetermined pattern of recesses on the surface of said skirt, said plurality of recesses defining a series of lubrication retaining discs in uniform spaced relation with respect to each other to provide lubrication retention along said outer circumference of said piston skirt.

17. A piston as set forth in claim 16, wherein said coating is bonded to said major thrust side and said minor thrust sides of said piston skirt relation and adapted to operatively engage lubricant between said major thrust side and the cylinder wall and said minor thrust side and the cylinder wall.